

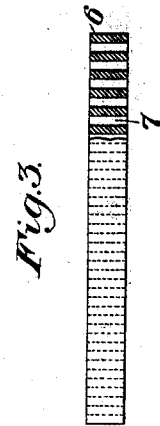
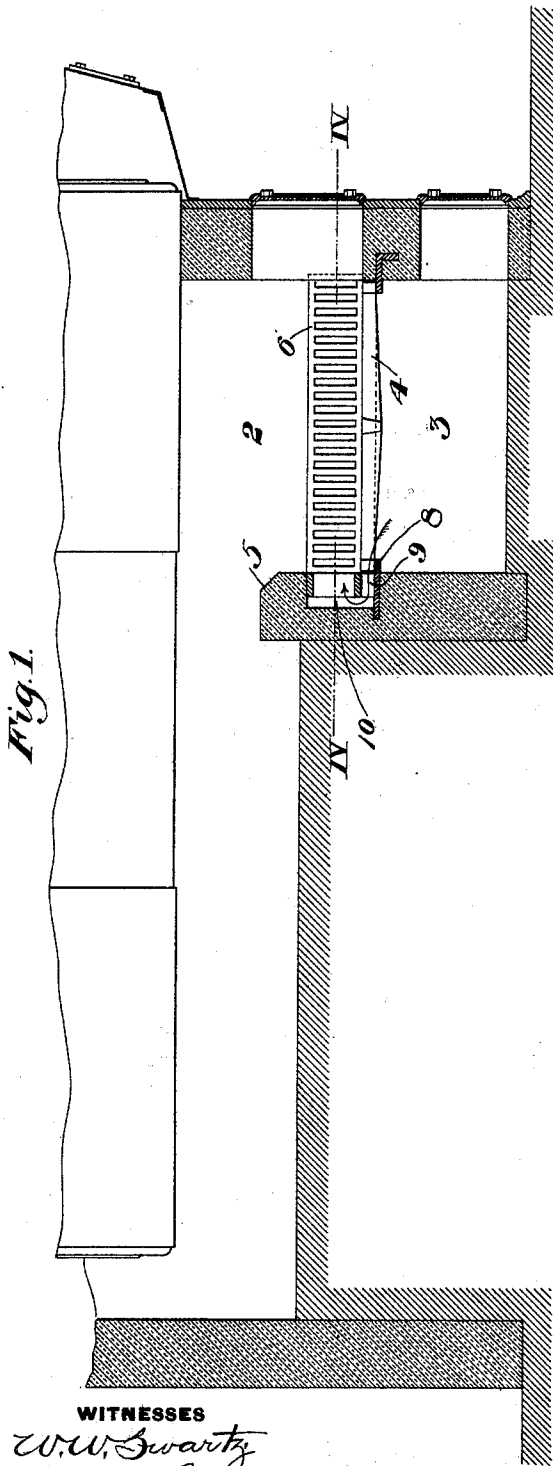
(No Model.)

2 Sheets—Sheet 1.

R. BOW.
FURNACE.

No. 520,032.

Patented May 22, 1894.



WITNESSES
W. W. Swartz
H. M. Corwin

INVENTOR
Richard Bow,
by his Attorneys
W. Barwell Bow.

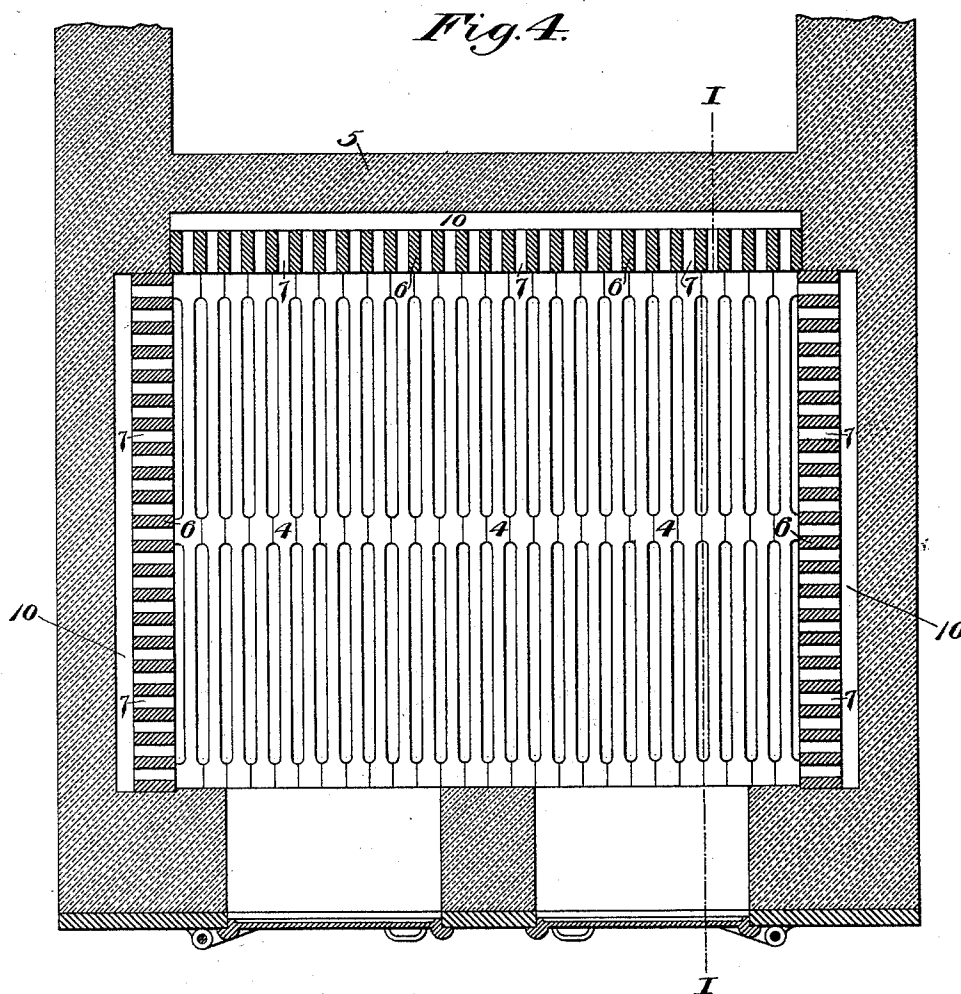
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W. Baxswell & Sons.

UNITED STATES PATENT OFFICE.

RICHARD BOW, OF MCKEESPORT, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS
TO RICHARD HAMPSON AND JAMES M. BROWN, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 520,032, dated May 22, 1894.

Application filed July 15, 1893. Serial No. 480,616. (No model.)

To all whom it may concern:

Be it known that I, RICHARD BOW, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Furnace, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 shows in vertical longitudinal section a steam-boiler furnace provided with my improvement, the section being taken on the line I—I of Fig. 4. Fig. 2 shows in elevation one of the plates or castings adapted to be set in the wall of the combustion-chamber for the purpose of admitting and distributing air. Fig. 3 is a top plan view thereof, partly in horizontal section. Fig. 4 is on a larger scale, and in horizontal cross-section on the line IV—IV of Fig. 1.

The object of my invention is to improve the construction of furnaces for steam-boilers and other furnaces, and to increase their efficiency and the durability of their settings.

It consists in a furnace having in some or all of the walls, an air chamber faced with a plate or casting provided with series of lateral perforations which receive air from the rear and discharge it into the sides of the combustion-chamber.

It also consists in certain other items of invention hereinafter described and stated in the claims.

In the drawings, 2 represents the combustion-chamber, 3 is the ash-pit or chamber below, 4, 4, are the grate-bars, and 5 is the bridge-wall. At three sides of the combustion-chamber are plates 6, shown in detail in Figs. 2 and 3. Each plate is preferably made of an integral casting, and is formed with a series of lateral holes or perforations 7 extending through the same and terminating substantially at or below the fuel level, so that the air which passes through the perforations, as hereinafter described, shall pass through the bed of fuel and not over it. The plates are set vertically on edge in recesses in the walls of the furnace, and are supported on frames or plates 8 having vertical lugs 9 which uphold the plates 6 and permit the

passage of air from the ash-pit 3 into chambers 10, which are formed in the walls of the furnace back of the plates 6 and communicate with the perforations of said plates. In the drawings I show the plates 6 set in three of the walls of the furnace. This is best, but within the scope of my invention they may be applied to a less number of the walls. The plates 6 are reversible, and when one face is burned or injured they may be turned about to bring the other face in front.

When the furnace is in use, the fuel on the grate-bars is fed with air which passes in the usual way up through the grate-bars, and there is also a supplemental supply of air which passes from the ash-pit into the chambers 10 and thence through the perforations in the plate 6 into the side portions of the combustion-chamber and through the bed of fuel therein. This supplemental air-supply is heated to some extent by passage through the plate, and it not only enhances the combustion of fuel, thus acting as a smoke-consumer, and securing greater economy in the operation of the furnace, but it tends to preserve the walls of the combustion-chamber and to prevent their rapid destruction by the burning fuel.

Within the scope of my invention as defined in the claims, various modifications in the form and relative arrangement of the parts may be made by the skilled mechanic.

The advantages of my invention will be appreciated by those skilled in the art. The apparatus is simple in construction, easy to apply, and the economy in fuel and saving in deterioration of the furnace which it occasions, are of great benefit. The invention is applicable, not only to steam-boiler furnaces, but to furnaces of other construction and used for other purposes.

I claim—

1. A furnace having above the grate-bars an air-chamber formed in the furnace wall, and a perforated removable plate interposed between the air-chamber and the combustion-chamber and adapted to permit passage of air into the bed of fuel in the latter, said plate being supported above the base of said air-chamber to afford an air passage leading

transversely from beneath the grate-bars into said chamber back of the plate; substantially as described.

2. A furnace having above the grate bars
5 an air chamber formed in the furnace wall, a perforated reversible plate interposed between the air-chamber and the combustion-chamber, and adapted to permit passage of air into the bed of fuel in the latter, and a

supporting plate 8, having lugs which uphold said plate above the base of the air-chamber; substantially as described.

In testimony whereof I have hereunto set my hand.

RICHARD BOW.

Witnesses:

HOWARD SOLES,
JAMES M. BROWN.